

ABSTRACT OF THE DISCLOSURE

An improved fuel processor thermal management system for use with a fuel cell is disclosed. The process includes supplying an air stream and a fuel stream into a auto thermal reactor (ATR) and forming reformat gas therein. Then, preferentially oxidizing the reformat gas and the air stream in the preferential oxidizer reactor (PrOx). The temperature of the preferential oxidizer reaction is controlled with a water stream by vaporizing the water stream to form a first portion of vaporized water. Then, reacting the air stream with the reformat gas exiting the PrOx is reached in a fuel cell to form an anode exhaust stream which is subsequently combined with the air stream to heat the water stream to form a second portion of vaporized water. The first portion of vaporized water and the second portion of vaporized water form a steam fluid. The steam fluid heats the auto thermal reactor and the air stream prior to entering the ATR and the reformat gas prior to entering the water shift gas reactor (WGS) to control the temperature of the reformat gas.